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ARTIFICIAL INTELLIGENCE IN MARKETING – A PRESENTATION OF BENEFITS AND A FRAMEWORK FOR SUCCESSFUL IMPLEMENTATION

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Abstract

This work project will start with a brief definition of Artificial Intelligence (AI) and Marketing AI, followed by an overview of the evolution of AI to establish why now is the right time for businesses to invest in AI, more specifically in Marketing AI. This argumentation will be supported by presenting use cases of Marketing AI. In order to assist businesses with their implementation of AI, a framework for Marketing AI will be introduced and adapted based on a comparison with a Marketing and an AI framework. It then concludes with a description of limitations and challenges of AI.

Keywords:

Artificial Intelligence, Marketing, Deep Learning, Big Data

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1. Introduction

Elon Musk argues that AI might cause World War III, while Raymond Kurzweil, Google's Director of Engineering, thinks that it will enable us to improve human intelligence (Haenlein and Kaplan 2019). Nobody knows which of these predictions, if any, will come true. However, business innovators are certain that AI will soon be everywhere, in every product we buy and every service we use (Chui, Manyika, and Miremadi 2018). According to Haenlein and Kaplan (2019), it will be part of everyday life similarly to the internet or social media. It will have a fundamental impact on firms' decision making and interaction with stakeholders (Haenlein and Kaplan 2019). Therefore, the following work project will address the benefits and opportunities of marketing AI and advice firms on how to implement AI in their marketing processes.

1.1.Artificial Intelligence (AI) Definition

Commonly, AI is defined as mimicking human intelligence. In 1955, AI was described as the problem of "making a machine behave in ways that would be called intelligent if a human were so behaving" (McCarthy et al. 1955). The cognitive scientist Marvin Minsky similarly viewed AI as "the science of making machines do things that would require intelligence if done by men" (Minsky 1968). Furthermore, according to Weber (2019), the goal is to create AI, that is indistinguishable from human intelligence. Kaplan and Haenlein (2019), however, define AI more specifically as "a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaption".

1.2. Marketing AI Definition

Marketing AI can be explained as the creation of AI systems that, based on information about customers, the competition and the company, propose and/or take marketing measures to reach the best result (Overgoor et al. 2019). It harnesses consumer data, from online and offline sources, and AI methods such as machine learning in order to anticipate and enhance the customer journey (Tjepkema n.d.). Thereby, it enables firms "to intelligently target the right

customers with the right content across the right channel, and at just the right time" (Hande 2018).

1.3. History

AI has a history of delivering promises, which have often been greatly exaggerated and resulted in frustrating disappointments. These exaggerations have resulted in a 'boom and bust' cycle, which sometimes made it very easy and sometimes very difficult to obtain the needed research funding (Clarke 2019). An overview of the timeline is shown in Appendix 1.

The roots of AI likely date back to 1942, when the American writer Isaac Asimov published the short story called "Runaround", which deals with the Three Laws of Robotics: "(1) a robot may not injure a human being or, through inaction, allow a human being to come to harm; (2) a robot must obey the orders given to it by human beings except where such orders would conflict with the First Law; and (3) a robot must protect its own existence as long as such protection does not conflict with the First or Second Laws." (Haenlein and Kaplan 2019). This story inspired many scientists working in the field of AI, robotics, and computer scientists.

At the same time, the mathematician Alan Turing developed a code breaking machine for the British government, which should decipher code, that was used by the German army during the Second World War (Haenlein and Kaplan 2019). In 1950, Turing published a well-known article explaining how to develop intelligent machines and how to test their intelligence. His "Turing Test" is still believed to be the best method to classify the intelligence of an artificial system (Haenlein and Kaplan 2019; Weber 2019). The concept is for a human to interact with a computer and another human. If he is unable to distinguish the computer from the human, the computer is said to be intelligent (Turing 1950). In 1956, the phrase "Artificial Intelligence" was officially coined when the first academic conference on the subject, the Dartmouth Summer Research Project on Artificial Intelligence (DSRPAI), was hosted at the Dartmouth College. Its objective was to create a new research field aiming to create machines, that are able to imitate

human intelligence (Bughin et al. 2017; Haenlein and Kaplan 2019). In the same year, the first AI program, "Logic Theorist", was developed by researchers of the former Carnegie Institute of Technology (Gugerty 2006). According to Gugerty (2006), this was the first that was able to imitate aspects of humans' capability to solve complicated problems.

Later in the 1950s, the previously mentioned scientist Minsky founded the AI Laboratory at the Massachusetts Institute of Technology (MIT) (Bughin et al. 2017). Here, Joseph Weizenbaum developed the natural language processing tool "ELIZA" from 1964 to 1966, which was able to imitate a human conversation and was one of the first programs capable of attempting to pass the "Turing Test" (Haenlein and Kaplan 2019).

In the 1970s, funding declined as research backers grew tired of waiting for practical AI applications capable of delivering on their profitable promises (Negnevitsky 2002, cited in Bughin et al. 2017).

During the 1980s, AI was revived when university researchers developed so-called "expert systems" (Feigenbaum 1980 cited in Bughin et al. 2017). Examples of these include ELIZA and the extremely fast chess playing program Deep Blue, which was developed by IBM (Haenlein and Kaplan 2019). Deep Blue was able to defeat the world chess champion Gary Kasparov in 1997 by using brute force in order to analyse up to 60 billion possible moves within 3 minutes (Makridakis 2017). However, these expert systems assume that human intelligence can be reconstructed as a series of "if-then" statements (Haenlein and Kaplan 2019). Similarly, Deep Blue was also based on if-then rules, logic and decision trees, but was incapable of learning from its mistakes (Makridakis 2017). Therefore, as these expert systems are not able to learn from external data and to utilize these learnings for the achievement of goals and tasks through adaptation, they are technically not true AI according to the definition of Haenlein and Kaplan (2019). This further disappointment was one reason for the lacking progress in the beginning and for the mismatch between expectations and results (Haenlein and Kaplan 2019).

In the 21st century, AI experienced another boom as advances were made in deep learning (Buchanan 2005). Google developed its first self-driving car in 2009 and a program called AlphaGo in 2011, that was able to beat GO champions in a game with an infinite number of moves. This required the program to use learning algorithms to enhance its performance as it continues playing (Makridakis 2017). This practice of using algorithms, which penalize wrong decisions and reward right ones, is called reinforcement learning and is a great improvement over the previous expert systems, which were unable to learn through adaptation (Nicholson n.d.). Deep Learning, a certain type of artificial neural network, is the basis for most applications known as AI such as Facebook's image recognition algorithm and speech recognition algorithms for smart speakers and self-driving cars (Haenlein and Kaplan 2019).

1.4.Why AI now?

As established, AI has been around for decades, but has recently grown in popularity. This can mainly be contributed to three factors: the emergence of Big Data, the availability of inexpensive and expandable computer power, as well as the creation of more sophisticated algorithms (Bughin et al. 2017; Overgoor et al. 2019).

But will AI finally be able to deliver on its promises? Research suggests that it is indeed finally starting to bring real business benefits (Bughin et al. 2017). That is why AI has infiltrated the awareness of every industry. In 2016, AI was mentioned in twice as many articles as the year before and nearly in four times as many as in 2014 (Bughin et al. 2017). Moreover, online firms such as Google are investing great amounts of money in AI. It is estimated that in 2016 between $20 and $30 billion were invested (Bughin et al. 2017). According to Quan and Sanderson (2018), this means that until 2016 AI investment has tripled since 2013.

Apparently, firms are right to do so as it is stated that companies that incorporate advanced digital technologies such as AI can boost their revenue by 6% to 10% (Gerbert et al. 2017) and

that it can provide a powerful tool for disruption (Bughin et al. 2017). Moreover, AI is believed to contribute $15.7 trillion to the worldwide economy by the year 2030 (Rao and Verweij 2017).

2. Use Cases of AI in Marketing

One way to utilize AI is for the *personalization* of services, products, communication and advertising. According to Gerbert et. al (2017) this is a profitable undertaking as personalized experiences can boost revenues by 5% to 10%, which is two to three times more than for firms not using personalization. Through the creation of AI-based profiles, which are developed by analyzing consumer-generated data, firms can make more informed marketing decisions, personalize offerings and offer the right products to the right customers (Kietzmann, Paschen, and Treen 2018; Ray 2019). Moreover, it can be used for advanced targeting and more personalized communication by designing messages that resonate best with each individual customer's preferences (Kaplan and Haenlein 2019). Another example is the automatic adaptation of websites in order to better fulfil each customer's needs (Overgoor et al. 2019). Moreover, firms can utilize AI for *send time optimization.* By delivering marketing messages at exactly that time, at that each specific customer is most likely to respond, increases the probability of conversions according to Hande (2018). And many organizations are already successfully implementing these personalization techniques. One example is a global retailer, who analyzed the data gained from its loyalty app (e.g. time of day, location, purchase frequencies) to better understand their customers' weekly routines. The retailer then built a real-time marketing system, which delivers half a million customized offers in one week.

Another example is that of a multiline insurer, who segmented their customers with the help of machine learning (Gerbert et al. 2017). The firm then built a model to analyze the insurance needs of customers while those pass through different stages in life (Gerbert et al. 2017). The model then recommends a suitable next offer to the sales agent to propose to the customer,

which is based on the customer's needs and the objectives of the insurer. This system increased the potential of cross-selling by 30% (Gerbert et al. 2017).

Another way firms can use personalization with AI is to develop *recommender systems*. These can help firms to suggest the most relevant content or product based on customers' browsing, viewing or purchasing history (Hande 2018). Thereby, firms can make sure that only customers, who have previously shown interest in a specific product are targeted with suitable recommendations (Hande 2018). Moreover, they can not only target one customer based on that customer's behavior, but also target similar customers with the help of AI-based personality profiles (Kietzmann, Paschen, and Treen 2018). This can present various upsell and cross-sell opportunities and boost session length and platform stickiness (Hande 2018). It is especially relevant for firms with a high number of different products (Ray 2019) such as Amazon, which was thereby able to launch its "anticipatory" one-hour shipping (Overgoor et al. 2019). Other online firms like Spotify and Netflix also employ AI for customized music and movie recommendations. As customers are likely to stop looking if it takes them more than 90 seconds to find a suitable movie, a good recommender system is crucial (Bughin et al. 2017). Netflix has estimated that it is thereby able to avert cancelled subscriptions, which would otherwise result in a loss of $1 billion in annual revenue (Bughin et al. 2017).

Understanding online word-of-mouth (WOM) with the help of tools such as *text mining* and *natural language processing (NLP)* is another use case of AI in marketing. NLP enables AI programs to understand the different shades of human speech in order to analyze customers' communication through, among others, social media activity such as Facebook posts and Tweets, product reviews or blog posts (Kietzmann, Paschen, and Treen 2018; Koleva 2019).

AI-based *image recognition* has also greatly improved over only a few years. According to Brynjolfsson and Mcafee (2017), for the best systems the error rate for identifying pictures from a database storing millions of images, decreased from over 30% in 2010 to only 4% in 2016.

Image recognition enables marketers to understand online WOM even better as they are able to not only analyze text, but also pictures shared by their customers (Kietzmann, Paschen, and Treen 2018). Apart from that, it can be used in traditional retail stores to scan and analyze customers' reactions, as well as their demographics (Kietzmann, Paschen, and Treen 2018).

Similarly, firms can adopt *speech recognition* to analyze spoken words (Kietzmann, Paschen, and Treen 2018). Sayint, a provider of call-center services, applied this tool to better understand the wishes of their customers, to enhance efficiency of the call agents and to increase customer satisfaction (Kietzmann, Paschen, and Treen 2018).

Moreover, firms can utilize AI for different *modelling and prediction purposes*. FedEx and Sprint, for instance, make use of predictive churn analytics to analyze customers likely to not use their services again. They are then able to interfere by offering extraordinary promotions and excellent customer support (Ray 2019). Furthermore, firms can develop models that predict reactions to new marketing campaigns (Overgoor et al. 2019). Infinite Analytics, for instance, developed a system predicting the probability of a user clicking on a specific advertisement. This system improved the placement of online advertisements for a global company and thereby tripled their advertising ROI (Brynjolfsson and Mcafee 2017). Plus, models that establish latent customer attributes can be created with the help of AI (Overgoor et al. 2019). Amazon used a similar model in order to make the aforementioned one-hour delivery model possible. They were able to predict product need so far ahead to be able to ensure that the product is stored close to a customer before he even decides to purchase it (Overgoor et al. 2019)

Chatbots are another use case of marketing AI. They are based on AI systems and interact live with customers through a chat interface (Hande 2018). As conversational marketing is growing in popularity, this technology is likely to be a worthwhile investment (Hande 2018). That is why, according to Hande (2018), over 80% of companies are planning to make use of chatbots until 2020. With this, firms are able to add a high degree of personalization to web or mobile

applications. AI chatbots not only have access to and can learn from previous interactions with customers, but also to an entire internet's worth of data, knowledge and search records (Hande 2018; Tjepkema n.d.). This allows them to be greatly more efficient than human customer service agents and thereby decreases labor costs and time by a high degree (Hande 2018; Tjepkema n.d.). Plus, NLP can even give these chatbots a human touch.

Moreover, AI can be used as a basis for *pricing mechanisms*. So-called yield management programs have been adopted for pricing of airplane seats and hotel rooms for years, but according to Bughin et al. (2017), this dynamic pricing can be extended to all other areas of the marketplace. In future, AI systems could automatically change prices in line with the pricing strategy of each firm (Bughin et al. 2017). That way suppliers will be able to maximize their earnings (Ray 2019). Airbnb, for instance, recommends prices to their sellers so that they are able to enhance their chances with a tenant, thereby making Airbnb more attractive for sellers (Ray 2019). Moreover, having the ideal price at the ideal time raises consumer satisfaction and results in a higher number of sales and, thus, increased profit (Bughin et al. 2017).

Another very important use case of AI is *content generation/optimization*. AI can analyze which customer segments are most likely to respond to which kinds of content, and can generate such content (Hande 2018) through the following means: (1) Natural Language Generation (NLG), which helps to develop humanly, creative content, (2) image generation, which creates realistic pictures and videos based on textual explanations and (3) speech generation, which supplies purposeful voiceovers for commercials (Kietzmann, Paschen, and Treen 2018).

3. Frameworks

It has now been made clear that AI's potential for disruption is great. There are many examples of new entrants to a market, which are AI-powered and win against traditional market players (e.g. Uber in the taxi industry, AirBnb in the hotel industry) (Bughin et al. 2017). However, many business managers are unsure about how to integrate AI into their business (Bughin et al.

2017). In the following, a widely known marketing framework will be presented, succeeded by an AI framework. Both of these will be evaluated and analyzed for possible weak spots. They will then, where possible and appropriate, be compared with a Marketing AI framework, for which, on the basis of this comparison, improvement suggestions will be given. This is done to give companies an understanding of how to implement AI into their marketing processes.

3.1. Marketing Framework

The marketing plan by Kotler et al. (2005) (Appendix 2) was chosen as the marketing framework as it gives a broad overview of the different aspects that managers have to consider when developing a marketing strategy for their business.

The marketing plan begins with an *executive summary*, which briefly outlines the main objectives and proposals of the plan (Kotler et al. 2005).

The next part is a *description of the current marketing situation,* which presents an analysis of the company's environment, goals, strategic approach and actions (Kotler et al. 2005). This enables the company to identify areas of concern, opportunities and to derive strategies that improve their marketing accomplishments (Kotler et al. 2005). It should define the target market and the firm's position in it, as well as a detailed description of that market, which includes the different segments and the market size, by segment and in total, over the past years (Kotler et al. 2005). Moreover, information should be given about the performance of the company's products, their competition and the distribution channels. Other important environmental factors include political, economic, socio-cultural, technological, legal and ecological forces, which are commonly known as the forces analyzed as part of the PESTLE analysis (Marmol, Feys, and Probert 2015). It is essential for a firm to examine all of these factors while positioning and creating its offering to the target market (Kotler et al. 2005).

This section is followed by a *SWOT analysis*, which deduces insights from the market audit. It includes a short description of crucial factors for success in the market, as well as strength and weaknesses a company has compared to its competitors (Kotler et al. 2005).

The next part sets the company's *objectives* and examines *issues* that could possibly affect these (Kotler et al. 2005).

This is followed by an outline of the *marketing strategy* compiled to reach these objectives. It specifies the target market segments, their different needs, their marketing responses and their profitability and the strategy developed for each specific segment (Kotler et al. 2005). Moreover, it describes the strategies for all elements of the marketing mix, being price, product, promotion and place (commonly known as the 4P's of Marketing) (Kotler et al. 2005).

Next, distinct *action programs* will be derived from the previously defined strategies. They will answer questions such as: "What will be done? When will it be done? Who is responsible for doing it? How much will it cost?" (Kotler et al. 2005, 72).

In the *budget* section of the plan, a forecasted profit and loss statement will be developed by the marketing manager, which can then easily be approved or modified by top management.

Lastly, *controls*, which track the progress, will be specified (Kotler et al. 2005). This ensure simple reviews and that prompt implementation of corrective actions (Kotler et al. 2005).

3.1.1. Discussion of the Marketing Framework

The marketing plan gives a comprehensive overview of developing a marketing strategy for a business. There are only a few aspects that could be criticized. One is that the importance of connecting the marketing strategy to the overall business strategy is not mentioned. It is vital to ensure that the marketing strategy is in line with the broader company goals.

3.2. AI Framework

Bughin et al. (2017) have developed a framework for the implementation of AI into workplace processes, which will be used as the basis for this report (Appendix 3).

The first step is to identify *use cases and sources of value*. According to Bughin et al. (2017) and Matskevich (2018), it is crucial to determine which issues AI-based initiatives could potentially solve. Bughin et al. (2017) suggest looking at applications over a one- to five-year span to identify which ones can be exploited largescale immediately, which ones are developing, but still unproven and which ones can potentially provide a first-mover benefit at a later stage. Moreover, a "test and learn" procedure is recommended to verify the business case before scaling up successful projects (Bughin et al. 2017). This allows firms to figure out factors of risk and provides them with data that help with decision-making in the future (Matskevich 2018). Thereby, they can set the appropriate goals for AI implementation for their business (Matskevich 2018). Then, it is important to connect AI to the company's overall strategy (Bughin et al. 2017). This is supported by Khodabandeh et al. (2019), who state that even though AI capabilities rely on technological innovations, companies that extract value from it have incorporated it as a core aspect into their overall strategy and do not solely view it from a technology angle.

The next step is about *building the data ecosystem*. As stated by Brock and von Wangenheim (2019) data is "the fundamental basis for AI success". In AI applications, "data management is as important as algorithms" (Quan and Sanderson 2018) and their successes are immediately dependent upon the quantity and quality of the available data (Plastino and Purdy 2018). Therefore, it is vital to know what data is already accessible and where to acquire additional relevant data (Bughin et al. 2017). It is, thus, advisable to begin with a data inventory (Brock and von Wangenheim 2019) and to identify especially valuable data (Bughin et al. 2017). Then, data should be made usable for analysis and it should be decided whether it will be aggregated, pre-analyzed or stored in original granularity (Bughin et al. 2017).

After that, it is about finding the right *techniques and tools*. Again, Bughin et al. (2017) highlight the importance of organizational agility. According to Gerbert, Justus, and Hecker

(2017), an agile approach is compulsory for AI projects as they go through constant learning and adjustment. Another important factor for agile firms is collaboration, internally as well as externally (Bughin et al. 2017). Internal collaboration is particularly important for technologies such as AI as these often cross over various parts of the company, which have traditionally been more siloed (Bughin et al. 2017). External collaboration makes the development of AI systems more affordable and accessible (Matskevich 2018). Firms, thus, need to identify their own capabilities and those areas, where others might be able to help them, as well as improve their collaboration skills (Bughin et al. 2017). To sum up, they need to build an innovation ecosystem which taps into the strengths and capabilities of the firm as well as the firms network with suppliers, customers and alliances (Brock and von Wangenheim 2019).

The fourth step is about *integrating AI into the workflow.* This means that companies need to determine which areas machines are better at then humans and the other way around, create complementing positions for each and adapt processes appropriately (Gerbert, Justus, and Hecker 2017). Bughin et al. (2017) argues that the challenge of transforming processes is often greater than the technical issues related to AI.

Lastly, the adoption of an *open culture and organization* is crucial for successful implementation of AI. Brock and von Wangenheim (2019) state that AI flourishes with an enabling culture and committed employees, which both helps to reduce internal opposition and lack of expertise. The development of this culture should be a prioritized from the on-set and may involve investment into the training of employees to help them understand AI insights and thus convince them to trust these for their decision-making (Bughin et al. 2017). Moreover, companies should directly and proactively address employee concerns about employment security, salary and privacy issues to foster employee engagement (Bughin et al. 2017; Brock and von Wangenheim 2019; Plastino and Purdy 2018).

3.2.1. Discussion of the AI Framework

Although this AI framework is quite comprehensive and helpful to understand the steps involved with the implementation of AI, there is still room for improvement.

Firstly, although the framework mentions goals and business needs that the firm wishes to solve in the first step of the process, there is no mention of a tracking process to analyze whether these goals are actually attained. In the marketing framework, this is done during the "Controls" stage and is helpful to ensure a timely correction of mistakes.

Secondly, compared to the marketing framework, the AI framework does not formulate a clear "action plan" for the implementation of the AI solutions. This is useful as it guarantees that every collaborator knows what there is to be done by whom, when and how it has to be done.

Thirdly, it does not mention the importance of security capabilities such as cybersecurity skills and control of AI. As previously mentioned, AI is greatly reliant on data and as most of this data is generated by networks, such as websites or sensor data from IoT devices, it is crucial to ensure cybersecurity (Brock and von Wangenheim 2019). Brock and von Wangenheim (2019) argue that firms should think strategically about data security, including mechanisms for disaster recovery, detection of intrusion and access rights management. Moreover, human control mechanisms for AI systems should be put in place as even the most intelligent AI systems can make irresponsible mistakes or can simply be hacked (Kaplan and Haenlein 2019). These security concerns, fueled by previous data leaks that many businesses have experienced, can result in lawsuits as well as in a great damage to consumer confidence in AI systems and the affected company (Ray 2019). Therefore, when creating an AI strategy in the first step of the process, it would be important to include a security strategy in order to ensure a focus on this during the implementation. Moreover, it would be recommendable to develop a human control system that regularly ensures that the AI system works as it is supposed to. Furthermore,

the *workflow integration* step should be adapted so that a clear action plan will be formulated during this phase.

3.3. Marketing AI Framework

Overgoor et al. (2019) have adapted the well-known and widely used CRISP-DM framework, which was traditionally developed as a model for data mining solutions, to give businesses a guideline on how and when to apply AI to marketing problems (Appendix 4).

The first step of the framework is to develop a *business understanding*. Therefore, it is recommended to conduct a situation analysis, similar to the marketing audit in step two of the marketing framework or the analysis of business needs in the AI Framework. Then, clear marketing objectives should be formulated with correlating goals to measure the success of the project and a project plan should be developed (Overgoor et al. 2019).

The next part is about *data understanding*, which is partly similar to the stage of *data ecosystems* in the AI framework. According to Overgoor et al. (2019) it is about understanding which data is important for a marketing AI project, collecting first data, explicitly describing it, exploring it and verifying its quality.

Afterwards, the next step is *data preparation*. It needs to be decided, which data will be selected for developing the marketing AI solution (Overgoor et al. 2019). This data needs to be cleaned, meaning that it should have a similar structure so that different data types are easily comparable (Overgoor et al. 2019). Where needed, it should be add to the data by, for instance, creating new data based on obtained values from the raw data (Overgoor et al. 2019). Moreover, it can sometimes be appropriate to integrate data to make data handling easier (Overgoor et al. 2019).

The *modelling* step of the framework is about building an AI model that satisfies the previously defined marketing need (Overgoor et al. 2019). For that, the best model technique to solve the analyzed problem needs to be identified by exploring different ones and choosing the best performing one (Overgoor et al. 2019). Then, the model needs to be built with the use of the

training set, adjusted on the validation set and then assessed by analyzing the performance on previously defined testing criteria (Overgoor et al. 2019). This is an iterative process of adapting and retraining the model until the outcome is satisfying (Overgoor et al. 2019).

This is followed by the *evaluation* stage, which compares the results with the goals, that were specified in step one of the process (Overgoor et al. 2019). Moreover, the process needs to be reviewed and it should be established whether all of the data is still available in order to deploy the model (Overgoor et al. 2019). Next steps should also be formalized, being either the deployment or further improvement of the model (Overgoor et al. 2019).

If there is nothing to improve, the process enters into the final stage of actual *deployment*. Here, deployment is planned, specifically how and when the model will be implemented and how it will be audited and sustained (Overgoor et al. 2019). Then, a final report should be compiled, which reexamines the whole procedure and identifies learnings for prospective comparable projects so that the process can be enhanced continuously (Overgoor et al. 2019).

3.3.1. Discussion of the Marketing AI Framework

The selected Marketing AI framework does eliminate several of the weak spots of the two previously analyzed frameworks. Firstly, it does formulate clear objectives and goals for measurement of success, which the AI framework neglected. Secondly, it does have an *evaluation* step to compare the previously set goals with the outcomes. Thirdly, it does define an action plan during the *deployment* phase, which the AI framework failed to mention. Fourthly, the recommended modelling approach (the "iterative process") is in line with the agile "test and learn" approach recommended in the AI framework.

However, there are still a few areas where it could be enhanced. Firstly, the first step of the framework should be adapted in order to include a clear strategy formulation. Furthermore, this strategy should then be connected to the overall business strategy. It has been made clear that a connection to the firm's strategy is important to ensure that the AI strategy is in line with the

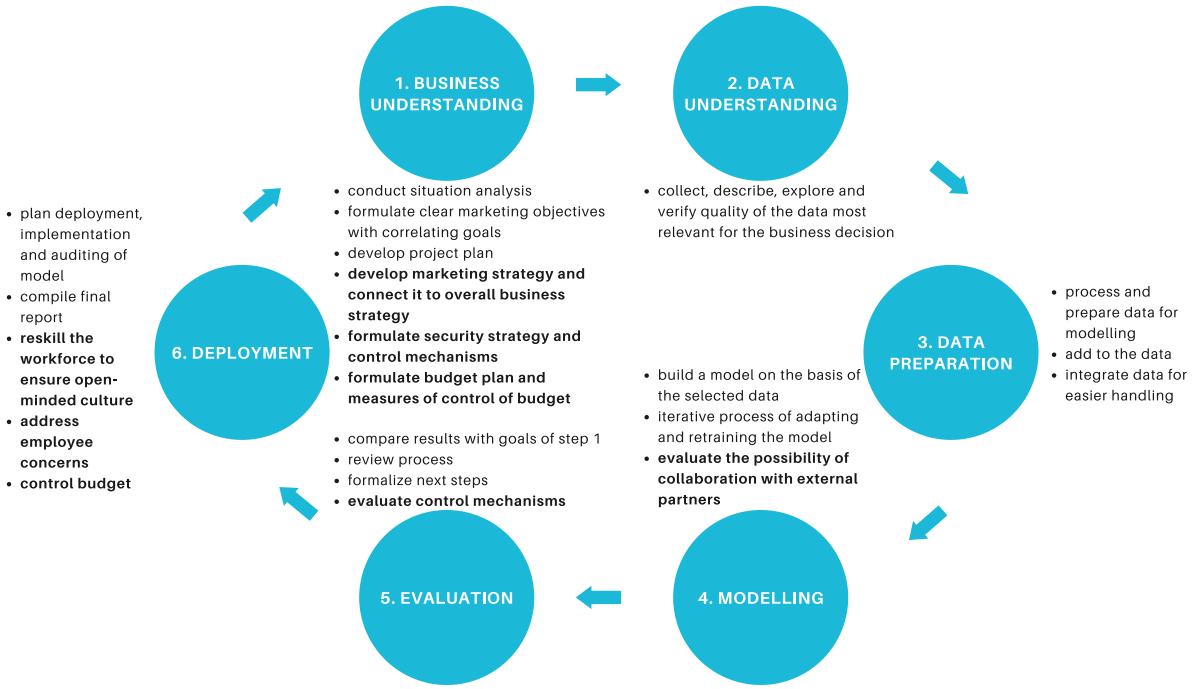
broader company goals and that is focused on adequately. Moreover, similarly to the AI framework, this framework also fails to mention the importance of an adequate security strategy. Thus, a strategy for cybersecurity, together with control mechanisms, should also be detailed as part of this first step. The control mechanisms should then also be evaluated during the *evaluation* part of the framework.

Secondly, the Marketing AI framework does not mention the possibility to collaborate with external partners if a firm does not possess the resources to do it themselves. This should be included as a note in the *modelling* step. Often times, firms stay away from developing AI solutions because they believe they do not possess the right skills without realizing that they can outsource parts of the development. Therefore, it is important to mention this in a comprehensive framework for implementation of marketing AI.

Thirdly, this framework does not discuss the importance of having the right, open-minded culture with skilled employees. Thus, it neglects the importance of reskilling the workforce, which is vital in order to ensure that employees trust the insights generated by these new AI solutions and actively incorporate them into their workflow. Furthermore, it does not point out that firms should address employee concerns regarding AI and, for instance, job security. This can be another hurdle for the successful integration of AI into the workflow and should therefore be made part of this framework.

Fourthly, there is no step, in which budgets are defined. This is important as it ensures the feasibility of the project and enables firms to control the success of these projects even better.

All of these described adaptations are visually summed up in the following, modified framework. The adaptations are highlighted in bold in order to enable an easy comparison with the original framework.



4. Conclusion

To sum up, the benefits of the inclusion of AI in the marketing strategy have been shown as well as a framework, which helps with this integration. However, one must not forget that there are plenty of limitations to AI, which require great effort to overcome (Chui, Manyika, and Miremadi 2018). One is the massive amount of data, more specifically labelled data, that is required to train AI systems (Chui, Manyika, and Miremadi 2018). Firstly, it can be difficult to obtain that much data in the first place, but secondly it demands immense human resources to correctly label this data for training (Chui, Manyika, and Miremadi 2018). Another limitation is the explainability problem (Chui, Manyika, and Miremadi 2018). Large and complex models increase the difficulty to easily explain how the models reached certain decisions (Chui, Manyika, and Miremadi 2018). However, being able to explain the workings of these AI tools is sometimes very useful or even required to ensure its outcomes are just and fair (Chui, Manyika, and Miremadi 2018). Plus, the need for explainability is further increased when thinking about regulatory requirements (Chui, Manyika, and Miremadi 2018). Further limitations are the generalizability of learning and the possibility of data and algorithms being biased (Chui, Manyika, and Miremadi 2018). Unlike humans, AI models cannot take

experiences from one circumstance and directly apply it to another, which results in companies having to repeatedly invest resources to train more models for sometimes even similar purposes (Chui, Manyika, and Miremadi 2018). Moreover, although AI is essentially impartial and prejudice-free, this does not implicate that AI-based systems cannot be biased (Haenlein and Kaplan 2019). This is due to the fact that the input data, on which the AI system trains, can have bias and this bias will then be added to the AI systems and may even be magnified during their learning process (Haenlein and Kaplan 2019).

Thus, although AI offers great benefits for companies and it is definitely advisable for companies to invest in it in order to be able to keep up with competition, there are also some limitations to consider. Further research should be done to solve these limitations and to determine regulation needs, which might include the development of protocols for the safe development of AI systems, as well as the liability of firms for mistakes that their AI algorithms might make.

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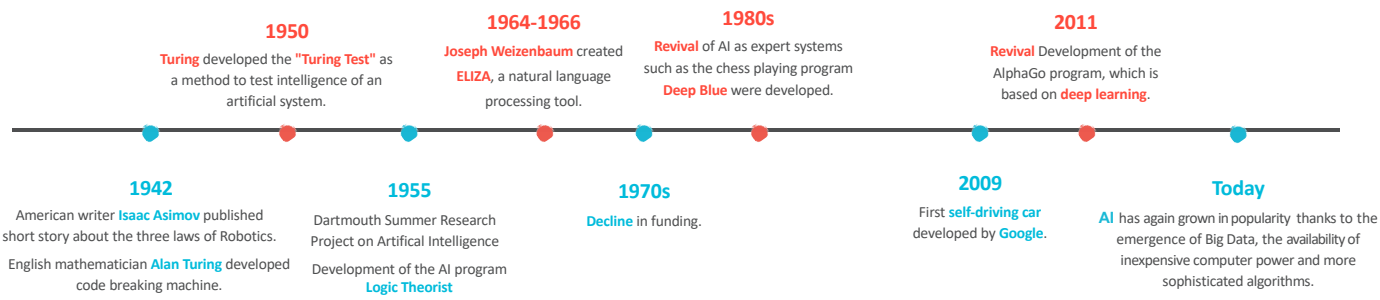
6. Appendices

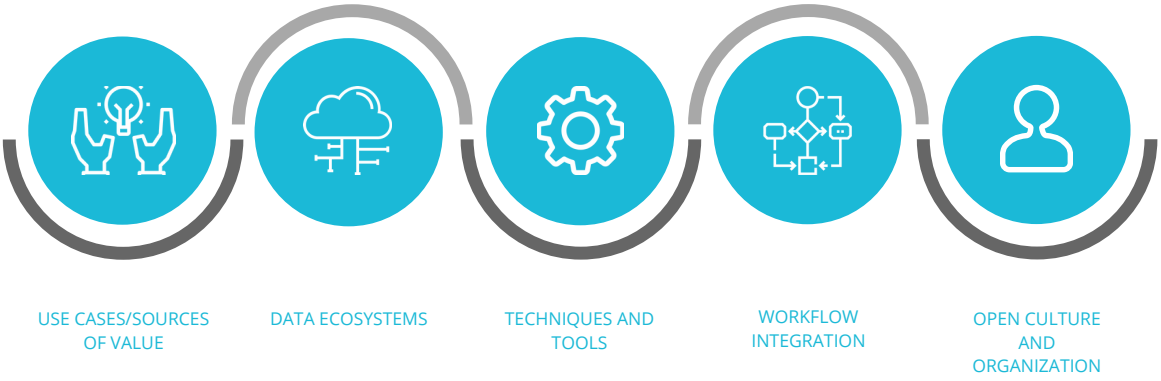
Appendix 1: A brief history of Artificial Intelligence



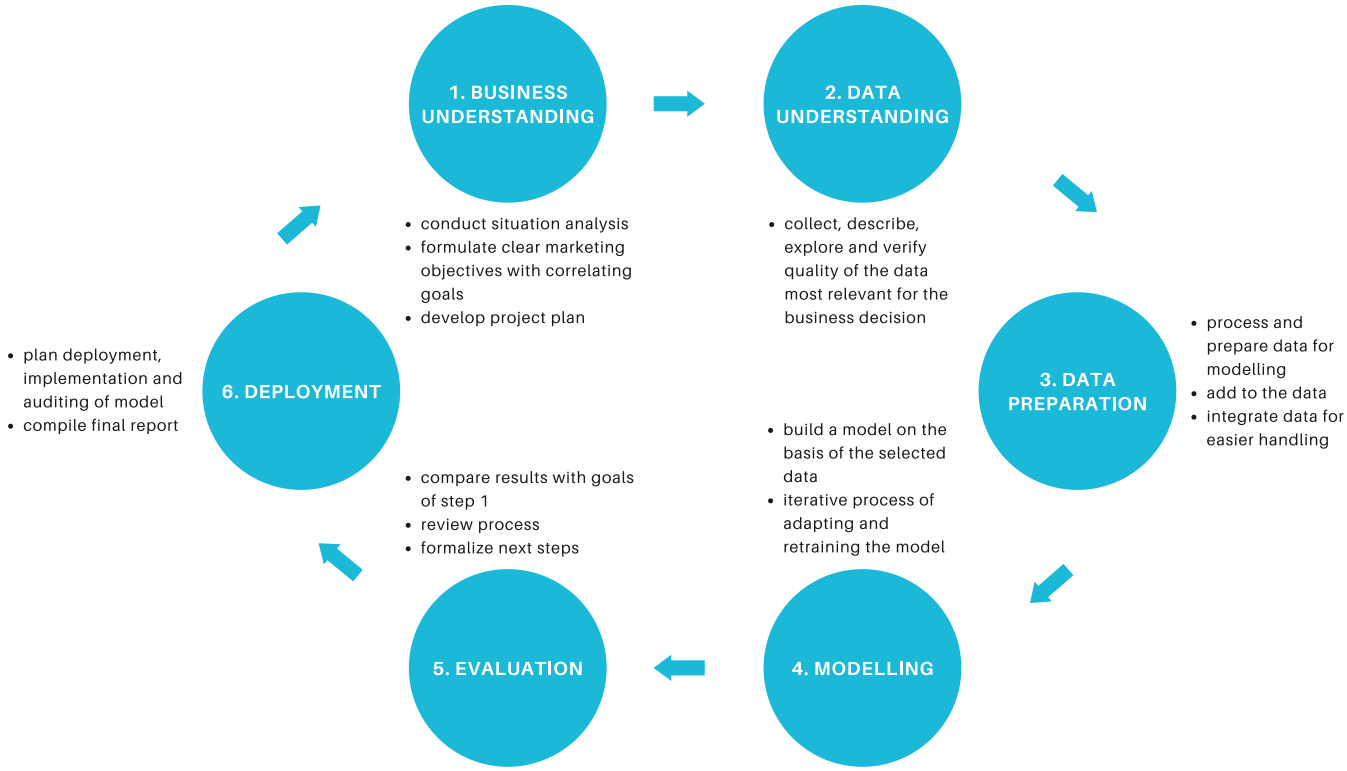
Appendix 2: Marketing Plan by Kotler (Kotler et al. 2005)

Executive Summary	Quick overview of the plan
Current marketing situation	Background data on market, product, competition and distribution
SWOT analysis	Company's strengths and weaknesses, main opportunities and threats
Objectives and issues	Definition of objectives regarding sales, market share, and profits
Marketing strategy	Marketing approach used to achieve those objectives
Action programs	*What* will *when* be done, by *whom* and *what* it will costs
Budgets	Forecast of expected financial outcomes
Controls	Measurement of progress

Appendix 3: AI Framework (Bughin et al. 2017)



Appendix 4: Marketing AI Framework (Overgoor et al. 2019)



Appendix 5: Modified Marketing AI Framework (adaptations in bold)